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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/774,673	02/01/2001	John Lillington	550-204	3519
7590 04/02/2004		EXAMINER		
NIXON & VANDERHYE P.C.			VARTANIAN, HARRY	
8th Floor 1100 North Glebe Road.			ART UNIT	PAPER NUMBER
Arlington, VA 22201-4714			2634	6
		DATE MAILED: 04/02/2004		

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)				
	09/774,673	LILLINGTON, JOHN				
Office Action Summary	Examiner	Art Unit				
	Harry Vartanian	2634				
The MAILING DATE of this communication appears on the cover sheet with the correspondence address Period for Reply						
A SHORTENED STATUTORY PERIOD FOR REPL' THE MAILING DATE OF THIS COMMUNICATION.  - Extensions of time may be available under the provisions of 37 CFR 1.1 after SIX (6) MONTHS from the mailing date of this communication.  - If the period for reply specified above is less than thirty (30) days, a repl If NO period for reply is specified above, the maximum statutory period or Failure to reply within the set or extended period for reply will, by statute Any reply received by the Office later than three months after the mailing earned patent term adjustment. See 37 CFR 1.704(b).	36(a). In no event, however, may a reply by within the statutory minimum of thirty (30) will apply and will expire SIX (6) MONTHS fit, cause the application to become ABANDC	e timely filed  days will be considered timely.  rom the mailing date of this communication.  NED (35 U.S.C. § 133).				
Status		·				
1)⊠ Responsive to communication(s) filed on 01 F	ebr <u>uary 2001</u> .	:				
•	action is non-final.	<u>:</u>				
3) Since this application is in condition for allowa	, <u> </u>					
closed in accordance with the practice under E	closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11, 453 O.G. 213.					
Disposition of Claims		•				
4)⊠ Claim(s) <u>1-16</u> is/are pending in the application						
	4a) Of the above claim(s) is/are withdrawn from consideration.					
5) Claim(s) is/are allowed.						
6) Claim(s) 1-3,5,8-12 and 14-16 is/are rejected.						
7)⊠ Claim(s) <u>4,6,7 and 13</u> is/are objected to.						
8) Claim(s) are subject to restriction and/or election requirement.						
Application Papers		•				
9)⊠ The specification is objected to by the Examine	er.					
10)⊠ The drawing(s) filed on <u>01 February 2001</u> is/are: a)⊠ accepted or b)□ objected to by the Examiner.						
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).						
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).						
11) The oath or declaration is objected to by the Ex	caminer. Note the attached Off	ice Action or form PTO-152.				
Priority under 35 U.S.C. § 119						
12)⊠ Acknowledgment is made of a claim for foreign	priority under 35 U.S.C. & 119	)(a)-(d) or (f)				
a)⊠ All b) Some * c) None of:						
1.⊠ Certified copies of the priority documents have been received.						
2. Certified copies of the priority document		ation No				
3. Copies of the certified copies of the prior						
application from the International Bureau	·	woo in the National Grago				
* See the attached detailed Office action for a list of the certified copies not received.						
	·					
Attachment(s)	A) 🗆 1-1	(DTO 442)				
1) Notice of References Cited (PTO-892)  4) Interview Summary (PTO-413)  Paper No(s)/Mail Date						
3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>5</u> .		al Patent Application (PTO-152)				

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#### **Detailed Action**

#### Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. *The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided*. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

## Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
- 2. Claim 1-3, 5, 8-9, 14, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Gockler(US Patent# 4,839,889). Regarding Claim 1, Gockler meets the following limitation of the Claim:

Apparatus for frequency content separating an input signal, said apparatus comprising: (Column 1, lines 13-15)

(i) a plurality of frequency splitting stages, each stage including (fig 8)

one or more up-converter and down-converter pairs, an up-converter and down-converter pair serving to receive a complex input signal representing an input bandwidth (Column 4, Lines 56-68)

to output a first complex output signal representing an upper portion of said input bandwidth and fig 4; abstract

a second complex output signal representing a lower portion of said input bandwidth, **fig 4; abstract** said first portion and said second portion being contiguous and together representing said input

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bandwidth portion. fig 4; abstract

Moreover, regarding the last three limitations of the Claim, Gockler discloses the use of high and low pass filter therefore using such filters would produce a lower complex signal portion and a higher one. See Gocklers detailed text for the specific operation of the low and high pass filters.

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Regarding Claims 2-3, Gockler shows in figure 8 that the bandwidth of each signal is halved as it passes each stage in the filter bank. In figure 4, the frequency division of each channel is shown. Therefor, Gockler meets the limitation for going from an original input bandwidth to bandwidths of  $\frac{1}{2}$  for each portion of the signal.

Regarding Claim 5, Gockler meets the following limitation of the Claim:

wherein said first complex output signal and said second complex output signal each comprise a stream of digital sample values. (Column 4, Lines 20-23); Claim 1

Regarding Claim 8, Gockler meets the following limitation of the Claim:

wherein one or more of said up-converters and said down-converters comprises a finite impulse response filter. (Column 4, Lines 10-55); Note: A FFT can be implemented using a FIR filter

Regarding Claim 9, Gockler meets the following limitation of the Claim:

wherein one or more of said up-converters and said down-converters comprises a local oscillator generating a time varying coefficient signal by which sample signals are multiplied. (Column 5, Lines 8-20); (Column 1, Lines 34-54)

Regarding Claim 14, Gockler meets the following limitation of the Claim:

wherein said up-converter and said down-converter pairs are formed as a combined conversion unit with shared components.  ${\bf fig~8}$ 

Regarding Claim 16, the rejection for Claim 1 above also meets the limitations of this Claim.

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## Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

- 1. Determining the scope and contents of the prior art.
- 2. Ascertaining the differences between the prior art and the claims at issue.
- 3. Resolving the level of ordinary skill in the pertinent art.
- 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
- 3. Claim 10-12 rejected under 35 U.S.C. 103(a) as being unpatentable over Gockler(US Patent# 4,839,889). Gockler meets all the limitations of the Claims, except disclosing the different variations of the filter coefficients that can be used in his digital filter bank. However, Claims 10-12 are design choices since the selection of filter coefficients is arbitrary. There can be any number of DIFFERENT coefficient combinations to satisfy a particular FIR frequency response. This was well known to those in the art at the time the invention was made.
- 4. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gockler(US Patent# 4,839,889) in view of Imai et al(US Patent 5,864,800). Gockler meets all the limitations of the Claims except disclosing the use of a poly-phase filter in his conversion unit.

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However, Imai et al discloses "band splitting by a poly-phase filter bank." (see fig 9A and its description). Therefor it would have been prima facie obvious at the time the invention was made for Gockler et al to use poly-phase filters for his digital filter tree. The motivation to combine is that a poly-phase filter is one a plurality of filters, for instance quadrature mirror filter (QMF) or LPF, that can be used for "bandsplitting". (See Imai et al Column 2, Lines 36-53)

## Allowable Subject Matter

5. Claims 4, 6-7, 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry Vartanian whose telephone number is 703.305.8698. The examiner can normally be reached on 9-5:30 Mondays to Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703.305.4714. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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STEPHEN CHIN
SUPERVISORY PATENT EXAMINE

TECHNOLOGY CENTER 2600